Pump Flow Analysis

Among its broad product line, Ingersoll-Rand Company, Woodcliff Lake, New Jersey manufactures large circulating pumps such as the one shown above; this 4,000 horsepower unit supplies the cooling water for a power plant in the southeastern United States. In designing impellers for the pumps, the company's Pump Group makes use of a NASA-developed computer program supplied by NASA's Computer Software Management and Information Center (COSMIC) at the University of Georgia.

Known as MERIDL, the program performs flow analysis calculations which permit designers to evaluate the performance and efficiency characteristics to be expected from the pump's impeller. MERIDL also provides information that enables a trained hydraulic engineer to make design improvements. Through use of the COSMIC program, the company was able to avoid the cost of developing new software and to improve some product design features.

Ingersoll-Rand's Research Center, Princeton, New Jersey acquired the program from COSMIC and assisted company hydraulic designers in using it in the design process. An example of a product whose design was aided by MERIDL is the unit shown at right, an impeller for a large vertical circulating pump used to pump sea water into a desalinization plant in Saudi Arabia. Ingersoll-Rand also uses a companion COSMIC program called TSONIC for analyzing flow velocities in pumps, compressors and turbines.